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ACCESSIONS TO MAP-ROOM SINCE THE LAST MEETING.—New Zealand.—A Map of the Northern Island, showing the scene of the Military Operations of 1863. Presented by the War Office, through Sir E. Lugard. Africa.—A Sketch Map, showing the Track of Mr. Young and Party in search of Dr. Livingstone, 1867. Presented by Mr. Young. Two Maps of South Africa. Presented by A. Petermann. Route Map of Abyssinia, showing the advance of the British Expedition of 1863. Presented by the Topographical Office, through Lieutenant-Colonel-Cooke, R.E. America.—A Map of the Argentine Republic, showing the Provinces of Tucuman and Catamarca. Presented by A. Petermann.

The PRESIDENT said that although to his deep regret he was prevented by illness from being present at the last meeting of the Society, at which the complete success of the Livingstone Search-Expedition was happily recorded, he expressed to the Society by letter his sincere gratification at the result, and suggested as the most probable hypothesis that the great traveller would come out of Africa by Zanzibar. For, supposing that he had determined the great problem of the outflow of the waters from Lake Tanganyika, whether to the west or to the north, that problem being solved, he would not, he thought, with his small force, attempt to force his way through the kingdoms of Equatorial Africa, and make his way to the Nile. He wished, however, to say that if, through any advices we may receive, it should transpire that Livingstone had resolved to try to pass to the north through Equatorial Africa, in that case the Society might rest assured that the Council would be prepared to make every effort to organise a relieving expedition from Egypt, with the aid of the Viceroy, and probably according to a plan which has been suggested by Sir Samuel Baker.

The Paper of the evening was,—

*On the Exploration of the North Polar Region.* By Captain SHERARD OSBORN, R.N., C.B.

WHEN last I had the honour to address this Society touching Arctic Discovery and Exploration—on January 23rd, 1865, just three years ago—I submitted the following propositions, and endeavoured to convince you of their importance, and the comparative certainty and safety with which our conclusions might be carried out.

In the first place I argued, and still maintain the importance, in a generally scientific, and especially in a geographical point of

view, of an exploration of the area around the Northern Pole of our Earth.

In the next place I maintained, and strenuously do so still, the desirability, in a national and naval point of view, of keeping open that school of enterprise and adventure, combined with scientific research, which Arctic and Antarctic voyages have ever offered to British seamen in times of peace—a school of hardship and endurance, a field for men who will lay to their hearts the great truth, that

“ For sluggard’s brow the laurel never grows,  
Renown is not the child of indolent repose ”—

a scene of action in which in by-gone times were trained the hardy seamen and officers who broke the power of Spain when she aspired to crush this England of ours—and is still a field for active service, more than ever needed for our navy, when armoured war-ships lie months in harbour for a few hours at sea, and a dead level of mediocrity, from an especial education and uncompromising routine, threatens to destroy the individuality of my profession, and to leave the junior grades without one glimpse of hope beyond the coat-tails of some great admiral, which they are to grasp if they can.

Lastly, I argued that, although there were, I owned, three routes by which the unknown Polar area could be reached—viz., by Spitzbergen, by Behring’s Straits, and by Baffin’s Bay—I showed what I considered good grounds for saying that the last-named route—via Smith’s Sound and Kane’s Channel—afforded the best hopes of success, because the farthest known land was nearer the Pole than the Spitzbergen Isles; because there was every reason to think that the land extended still further north in Smith’s Sound; because animal life, and the existence of Esquimaux in that high latitude where Kane wintered were additional guarantees for the health and comfort of our explorers; and lastly, because from Smith’s Sound to Upernavik (a Danish settlement in Greenland) a certain boat-voyage could always be made every season, so as to insure communication with England annually. For all these reasons many of you concurred with me in thinking that the Baffin’s Bay route was the right one. Unfortunately for the speedy resumption of Arctic research at that time, an eminent German geographer, M. Augustus Petermann, came forward with a theory in favour of the existence of a passage for ships to the Polar area somewhere between Nova Zembla and Greenland. He urged, in the face of all our bygone experience, that as the Gulf-stream must flow into the Polar Sea, by following its course a watery highway would assuredly

be found. I fully recognised at once the serious nature of the difficulty, so opposite an opinion from one so deservedly eminent as Augustus Petermann would occasion. It was like trailing a red herring across a breast-high scent; and I own that a split took place in the Arctic camp, of which advantage was taken in official quarters, to say to your President as well as to me, that so long as Arctic authorities could not agree as to the best route to the Pole, Government were not likely to entertain any such project; and there were many who chuckled in triumph at the difference of opinion which enabled the dear old navy to hobble on its macadamized highway of crossing royal yards and adhering to routine.

Grieved though I was to defer the prosecution of my idea, I felt anything was better than to see in these days ships go on a Polar voyage, via Spitzbergen, and return empty-handed. I preferred, therefore, to be patient, confident that the Swedish Royal Expedition would tell all I anticipated of open water in that direction, and that the yearly travels of our steam whale-ships to Baffin's Bay would throw additional light on the Smith's Channel route.

To-night, with your kind permission, I propose to show what additional proofs I can of the merits of the Baffin's Bay route for the exploration of that great area within the 80th parallel, which is just a week's steaming\* from our coasts, and contains one million one hundred thousand square miles† of unknown sea or land.

Dealing first with the Spitzbergen route, let me say that I fully recognise the importance of a ship or ships being sent to follow up the course of the Gulf-stream, that mysterious river of warm water flowing through the wastes of the ocean, and to which we owe, under Providence, our blessed immunity in Great Britain and Norway from the paralysing rigours of a Labrador winter; that stream, equal to fifty Niles, in volume and length, ought—for a thousand reasons, which I will not pause to dilate upon—to stimulate the sailors of this sailor-nation to explore it from its fountain-head to where it debouches or recurves amidst the solitudes of the frozen North. Full of interest are its mysteries, and I sympathize with the learned President of our Royal Society, as well as the German philosophers, who would place it as a subject of prior importance, scientifically speaking, to mere geographical exploration. But I submit that wherever we penetrate the Polar area, we shall strike upon the Gulf stream in some shape or the other—from Melville Island to Nova Zembla down every channel have minor branches of that stream been encountered, on every shore has it left its mark in

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\* 1200 miles from the Shetlands.

† Miles square, 1,131,000.

drifts and wrecks carried from many a foreign land, and I plead, Let us explore first; then let knowledge be perfected by men of perhaps greater scientific acquirements than the sailor-officer. I want to be sure of the *expedition which first goes on this work getting well into the area before us and safely back again*. Therefore it is that I reiterate my objection to the Spitzbergen and Nova Zembla route for England's *first* essay with steamer and sledge to explore the Polar area.

No one, except a groggy Dutch skipper, ever got, I say, north of  $80^{\circ}$  on the east side of Spitzbergen, and on the west Scoresby's highest once, in a lane of water, was only  $81\frac{1}{2}^{\circ}$  N. latitude. In both cases the hindrance consisted in endless fields of ice streaming ever southward. Parry, in 1827, was told that, if he launched boats over a certain extent of ice-field, he must reach open water. He toiled in 1827 with his gallant crews in this endeavour. What he marched a-head one portion of the day, he was drifted back by the southerly action of the ice, and only reached  $82^{\circ} 45'$  N., when he desisted, beaten by the ice-drift: had there been land or fast-floe he might have succeeded. It may be said, Let it be tried when the autumn arrives, and the summer's ice-drift shall have left open water for ships. I reply, Remember the latitude you are dealing with.

If you are in earnest in wishing to see Arctic exploration pursued by our sailors, until the secrets of the Polar space are laid bare to human knowledge, we must not commence by a rash Polar voyage.

"Pas à pas on va loin" is a thoroughly sound Arctic motto. Send, if you please, a good steamer to trace out the autumnal ice-edge and limits of the Gulf-stream between Nova Zembla and Spitzbergen, and establish a small party of ten persons for a *winter's sojourn*, to procure meteorological observations at the north extreme of each of those places; but make your first deliberate essay towards the Pole elsewhere, where there is less risk to life, more certainty of success.

Although, for reasons to be presently explained, I shall refrain from saying one word to dissuade other nations from taking either the Behring's Straits or Spitzbergen routes in the united attempt I desire to see in 1869, of an exploration of the Pole, still in justice to all concerned, and as our duty as geographers, we must place on record the results of the experience of recent sound observers and explorers in the neighbourhood of Spitzbergen and Behring's Straits.

Hear what the Report of the transactions of the Royal Swedish Academy of Sciences says of the result of three scientific expedi-

tions, since 1861, to Spitzbergen, touching the probability of a water-channel being found north of that island :—

“ During the last years the idea has been vindicated that the Polar basin is composed of an open sea, only here and there covered with drift-ice. The learned geographer Dr. Petermann has even asserted that it would be as easy to sail from Amsterdam Island ( $79^{\circ} 47'$ ) to the Pole, as from Tromsø to Amsterdam Island.

“ This view is in itself so contrary to all experience that it scarcely merits refutation ; but as different prominent English Arctic navigators seem inclined to adopt the same view, in spite of the experience gained by their own numerous Arctic expeditions, we will here give some of the most important reasons against this supposition.

“ All who for a longer period have navigated the northern seas, whalers and Spitzbergen hunters, have come to the conclusion that the Polar basin is so completely filled with ice that one cannot advance with vessels, and all the attempts that have been made to proceed towards the north have been quite without success. Passing by older voyages, we will here only mention the following. In 1773 Phipps made an attempt to reach the North Pole by way of Spitzbergen, but cruised the whole summer, as late as the 20th of August, north of Spitzbergen, without being able to reach the 81st degree of latitude. In 1818 Buchan and Franklin repeated the same attempt, but without reaching a higher latitude than  $80^{\circ} 31'$ . The ice was high and closely packed ; no navigable aperture was observed in it, and the ships were considerably damaged. Scoresby, who for so many years cruised in the waters between Spitzbergen and Greenland, succeeded only once in attaining  $81^{\circ} 30'$  without any possibility of advancing further north, although a considerable aperture in the ice was seen extending from east to west. In 1827 Parry endeavoured to push forward from Spitzbergen to the Pole in boats drawn on sledges. He advanced on closely-packed broken ice to  $82^{\circ} 25'$  latitude ; he could from this point, on the 23rd of July, not see any trace of open water to the north (Parry, ‘ Attempt to reach the North Pole,’ pp. 100-105), and encountered on his return navigable water first at  $81^{\circ} 34'$  (p. 118).

“ Torrell and Nordenskiöld ascended, during the expedition in 1861, on the 23rd of July, a high top on Nordeast Land, Snötoppen ( $80^{\circ} 23'$  lat.), without being able from that height to see trace of open water to the north of the Seven Islands. A few days later, when the ice between North-east Land and the Seven Islands was separated a little, they could push forward as far as to Parry’s Island, though they, even from the highest tops on these islands (1900 feet,  $80^{\circ} 40'$  lat.), could see nothing but ice northwards.

“ From the top of White Mountain, at the bottom of Wijde Jans Water (3000 feet) we could, on the 22nd of August, 1864, not see anything but ice between Giles Land and Spitzbergen. Some vessels that had the same year attempted to sail round North-east Land were shut up by ice, and had to be abandoned by their crews. Before leaving the ships, an attempt was made to sail north, in order to return this way to Amsterdam Island, but they were soon met by impenetrable fields of ice.

“ Notwithstanding a high prize has been offered for the reaching of high degrees of latitude, none of the whalers, who else sail boldly wherever the hope of gain allures them, have considered it possible to win this prize. They would certainly not have neglected to make an attempt, had it been possible, as Dr. Petermann asserts, to sail to the Pole in three or four weeks.

“ We have had opportunities of speaking to most of the masters of vessels sailing to Spitzbergen. They make their richest booty during autumn, and stay, if possible, at Spitzbergen till September or the beginning of October. At this time they are accustomed to visit Moffen ( $80^{\circ}$  lat.) in order to kill walrus

on land. They testify unanimously that, although the packed ice at that time of the year sometimes moves from the coasts of Spitzbergen, yet that the ice-blink that appears in the north, and the rapidity with which the ice at northerly winds comes down, evidently proves that the distance between the southern border of the ice and the north coast of Spitzbergen cannot even then be very great. The northern ice-fields are, even in autumn, quite close.

"All experience hitherto acquired seems thus to prove that the polar basin, when not covered with compact, unbroken ice, is filled with closely-packed, un-navigable drift-ice, in which, during certain very favourable years, some larger apertures may be formed, which apertures, however, do not extend very far to the north. Older narratives by Dutch whalers, who are said to have reached  $86^{\circ}$  or  $87^{\circ}$ , nay even  $89\frac{1}{2}^{\circ}$ , must therefore be received with the greatest diffidence, if not looked upon as pure fictions, and the prospect of being able to advance with vessels from Spitzbergen to the Pole is no doubt extremely slight. It would be particularly unwise to choose the spring for such an attempt, and the passage east of Spitzbergen. At that time and by that passage it would be difficult, if not impossible, to reach even  $78^{\circ}$  of latitude. Whereas, on the west side, one can every year depend upon reaching the 80th degree of latitude, and in favourable years it might be possible, in September or October, to sail even a couple of degrees higher."

If Mr. Otho Torrell were here to-night he would, I feel sure, be able to tell you how fully these results of the investigations of the Swedish expeditions bear out the opinions I gave him in London; those opinions being, as I have said, based on the experience of the three previous centuries by our seamen and navigators. I have merely to add that the French, in their publication entitled '*Renseignements Hydrographiques*'\* fully support these opinions.

However, M. Petermann, I am bound to say, thinks otherwise, and he is supported in his views by some of the most eminent men of science in this country, who, like M. Petermann, assert that the Gulf-stream must open a highway for a properly equipped steamer through the Polar pack, and that it has only to be fairly tried to be successful. What is better still, the attempt, I have reason to hope, will really be made, and from a quarter which gives, in the quality of its seamen and the earnestness of its people, every chance of faithful devotion to the object in view. I wrote to M. Petermann the other day, pointing out that, if we could only be agreed as to the division of the labour and the routes towards the Pole, Germany taking one, France another, and America and ourselves another, that I thought our common object—Polar Exploration—would be successfully accomplished. That gentleman, I am bound to say, met me in the kindest and frankest manner; and, after upbraiding me for calling him a philosopher in my letter to the '*Times*'—a crime

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\* See '*Renseignements Hydrographiques*,' Paris, 1866, p. 186. Published au Dépôt des Cartes de la Marine. Par A. Le Gras, Capitaine de frégate.

which I beg to say I was unwittingly guilty of, and am most sorry for—M. Petermann says :—

“I lose no time in sending you word that, for the execution of a German expedition to the North Pole, M. Rosenthal, of Bremerhaven, offered me his excellent span-new screw-steamer the *Albert*, of 450 tons, last September ; and, to make the expedition still better found, he last week, in addition, offered me a second smaller steamer, the *Bionenkorb*. The expedition is to be got up for 1869, and, to take for its basis, the sea between Greenland and Nova Zembla.”

Now, this looks like work, and God forbid we should do anything than help these gallant Germans in their enterprise, and the young navy of the great Northern Confederacy could not have a nobler or better field on which to win its laurels.

Let us next turn to the Behring's Straits route, a route which our Gallic allies are bent on essaying. The Geographical Society of Paris, I learn from its talented secretary, M. Charles Mannoïr, takes a lively interest in a fresh effort to explore the Polar seas ; and the enlightened Emperor of the French has been one of the first to encourage the project laid down by M. Lambert. I feel sure they will carry with them our best wishes, and that this Society will not stint praise or honours for all they may do in that direction. Herald Island marks on that chart the furthest known land our ships had ever reached into the Polar Sea by that highway ; and until to-day all that was known beyond rested on an official report, which runs as follows, from Captain H. (now Rear-Admiral) Kellett, dated August 17, 1849, Behring's Straits :—

“ Still more distant than this group (*the Herald Isles*) a very extensive and high land was reported. There was a fine clear atmosphere, except in the direction of this land, where clouds rolled in immense masses, leaving occasionally the very lofty peaks uncapped, where could be distinctly seen columns and broken summits, which is the characteristic of the higher headlands in this sea—East Cape and Cape Lisburne for example. It becomes a nervous thing to report a discovery of land in these regions without actually landing on it, after the unfortunate mistake to the southward (‘ Wilkes's U. S. Expedition to the Antarctic Regions ’) ; but as far as a man can be certain who has 130 pairs of eyes to assist him, and all agreeing, I am certain we have discovered an extensive land.”

He then adds that the land he saw was probably a continuation of the land mentioned to Baron Wrangel by the inhabitants of the Siberian coast as being occasionally seen from Cape Yakan. Wrangel therefore first heard of this new land, and Kellett first established its existence, as far as his modesty and caution would allow him to claim it.

Last year, no less than four enterprising American whaler



captains\* saw this land again, and give us certain points well fixed by astronomical observations.† I am indebted to our distinguished president, Sir Roderick I. Murchison, for by far the fullest account of these discoveries; they are carefully laid down on the chart before you, and the records are concisely as follows:—

Captain Long, of the *Nile*, says he saw the new land on the 14th August, 1867, about 18 miles distant. By good observations he made the west extreme visible to be in lat.  $70^{\circ} 46' \text{ N.}$ , long.  $178^{\circ} 30' \text{ W.}$  The lower portions of the land were entirely free from snow, and seemed as if green with vegetation. Broken ice between the land and ship precluded a nearer approach. The *Nile* sailed easterly along the land all the 15th August and part of the 16th, but did not approach it nearer than 15 miles at any time.

The 16th August was a clear day; had a clear view of the land; made the S.E. extreme point by good observation to be in lat.  $70^{\circ} 40' \text{ N.}$ , long.  $178^{\circ} 51' \text{ W.}$  Saw a mountain in about long.  $180^{\circ}$ , which looked like an extinct volcano, and by rough measurement was 2480 feet high, and from the *Nile's* decks mountain ranges were seen extending northerly as far as the eye could reach.

Captain Bliven, of the *Nautilus*, says he saw land north-west of Herald Island extending as far north as lat.  $72^{\circ} \text{ N.}$ , and whilst cruising in  $71^{\circ} 20' \text{ N.}$ , long.  $175^{\circ} \text{ W.}$ , he traced lofty mountains in this new land extending to the north-west.

Captain Raynor, of the *Reindeer*, says he sailed along a new land, which had only been previously marked on his chart as *extensive land with high peaks*, and by good observations he placed a cape to the south-west in lat.  $70^{\circ} 50' \text{ N.}$ , long.  $178^{\circ} 15' \text{ W.}$ , and another cape to the S.E. he places in lat.  $71^{\circ} 10' \text{ N.}$ , long.  $176^{\circ} 40' \text{ W.}$  The land about this south-east cape he describes as high, rugged cliffs and barren grounds, and the coast beyond it turns north-west for 15 or 20 miles, and then north and north-east to the north of  $72^{\circ} \text{ N.}$

Mr. Whitney, in his letter to Sir Roderick Murchison, says: "After many enquiries among the officers of the whaling fleet, the correctness of these statements is *fully confirmed*," and adds that "*one shipmaster who has been as far north as  $74^{\circ} \text{ N.}$ , and nearly due north of Herald Island, could see peaks and mountain ranges far to the north-west of his position.*" We may safely, therefore, place this land on our charts; and, in general terms, I may add that it lies about 70 miles distant from the Siberian coast; that the coast has

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\* Long, of the *Nile*; Raynor, of the *Reindeer*; Phillips, *Monticello*; Bliven, *Nautilus*.

† See 'Pacific Commercial Advertiser,' published in the Sandwich Islands at Honolulu, together with the editorial remarks of H. M. Whitney, Esq.

been closely traced for 100 miles, and sighted here and there for 500 miles; that the south face visited seemed more fertile than the Siberian coast—drift-wood was seen, and abundance of walrus. The sea, though only 15 to 18 fathoms deep 40 miles off the land, was singularly blue, and it only needed a screw-steamer to have easily effected a landing.

Some of our enterprising American captains felt convinced the new land was inhabited, and Captain Long says he is assured of it, for on a cape a little westward of and opposite to Cape Yakan, he noticed an immense number of upright and prostrate columns, like obelisks or landmarks, and that “they were scattered over a large surface, and in clusters of 15 or 20 each, with intervals of several hundred yards between them.”

The existence of an island in 170° w. long., about north-west of Point Barrow, with a channel separating it from this new land, is likewise reported. Thus you see, brother geographers, in spite of the “masterly inactivity” of the British navy since M’Clintock’s voyage in the *Fox*, knowledge of the Arctic zone is still progressing, and to American sailors belongs the credit of verifying the report of a Polar land north of Siberia, as told to Admiral Wrangel in 1820 by the Tschukhtchi tribes of Cape Yakan, and a glimpse of which was first seen from H.M.S. *Herald* in 1850.

It is satisfactory to know that human knowledge does progress, though Britons may begin to despair of our part in conquest over man, or over nature; and we may say to the Dame Partingtons who put on their pattens and flourish their mops because we will not rest and be thankful,—a fig for your scolding, the world will keep moving.

Now, it is towards Behring’s Straits that the attention of French geographers has been directed by the persevering advocacy of M. Gustave Lambert, and he, it is said, will be ready to start on his exploration of the Polar area by that route early next year or late in this. So that, with the violets of 1869, we may reasonably hope to see the sailors of Germany striking northward, on the one hand, and those of France on the other. Surely you will feel with me that we should be playing our part at the same time, and by the route which of all other sbelongs to the sailor explorers of our race—Davis Strait and Baffin’s Bay. There, since our navy turned from a field in which it had honourably distinguished itself from 1818 to 1860, the enterprise of Americans in geographical exploration, together with the introduction of steam-power amongst our British whalers sailing from Hull, Dundee, Aberdeen, and Peterhead,

have contributed much to dispel vague difficulties and dangers really incident to Arctic navigation in the dear old-fashioned sailing-ships.

Since 1855 there is not a season in which British screw-whalers have not navigated Baffin's Bay. There is hardly a season in which vessels have not voluntarily wintered on the western shores of Davis Straits in the hope of a good cargo of fish-oil by autumn or spring fishing.

The introduction of steam as an element of safety and success in Arctic navigation was due to the English navy, and that fact, together with the information we gave, of how to winter with health and comparative safety, was turned to account by our intelligent brethren of the whaling fleet, and to the advantage, I believe, of an important branch of commerce and school for seamen.

When I tell you, therefore, that not only have whaling men recently voluntarily wintered on the west land, but that their wives have in several cases done so too, I maintain that the Arctic feat is robbed of half its terrors. Mr. Penny, of Aberdeen, has been accompanied by his wife more than once; as recently as 1867, some ladies returned from a winter in Exeter Sound. And, after all, why should not English wives go with their husbands to latitudes where Danish ones have cheerfully gone for years? But are Englishmen going to tell me that where these poor women dare to go for love you will not go for honour and zeal, and that what will add to our country's honour and the extension of human knowledge entails a risk which the adventurers should shun? You will say, may be, that such a region is only intended for an Esquimaux to exist in, that the European must perish on such a dietary in such a climate. I point to the American Mr. Hall, who, encouraged by the generous support of Mr. Grinnell and his friends in New York, has subsisted, since May 1860, for nearly seven years, in regions immortalised by the sufferings of Frobisher and Hudson of old, and rendered memorable in our times by the achievements of Parry, Back, Lyons, and Rae.

Knowledge has indeed been power to the men of to-day—ably have they availed themselves of it, whether it be such as the *Queen*, of Peterhead, who in 1866 wintered between Lancaster and Jones Sound in safety, those who this year returned from wintering in Exeter Sound, or those ships of America and Newfoundland who made a summer trip to Repulse Bay in search of whales, and left Hall encamped there last August—all attest how much further we are in advance to-day of the secret of voyaging and sojourning with impunity in those seas than we were thirty years ago.

The fact is, they have our Arctic experience to help them—good steamers, good charts, and a thorough knowledge of the land and the shelter harbours afford, from Cape Farewell to Smith's Sound: more than that, these fishermen and Mr. Hall have all found much aid and comfort from the supplies afforded by the natives who have, on both sides of Baffin's Bay, been found as high as any one has wintered; and it is this, together with the known abundance of animal life up Baffin's Bay and Smith's Sound, which makes me urge it as the proper highway to the Polar area. For believe me, the mere *coup de théâtre* of hoisting a flag on the spot called our Pole and singing "Rule Britannia," or "Hail Columbia," is not the object of my efforts.

You must bear in mind that, so far as English attempts to penetrate up Smith's Sound are concerned, no expedition has attempted it, and no *steamer* can be said to have fairly entered it before the *Arctic of Dundee*. Baffin, in 1816, sighted the entrance in a sailing-craft of 55 tons. John Ross did as much in 1818, in a bigger ship. During the search for Franklin's expedition I sighted its portal in a screw, the *Pioneer*, but at a distance; Inglefield, in a small-power screw-vessel, the *Isabel*. He advanced just within the entrance, laid down the shores very roughly, by eye-sight. He says of this strait, "My own impression is that there was nothing on the east shore that would have prevented our steaming through." Next came Dr. Kane, in the *Advance* sailing-brig, deep laden, and blown about by the strong gales of such a funnel between two seas, and he was followed by the sailing-schooner of Dr. Hayes, who was not able to reach, in so frail a craft, as far as Kane, and wintered, as you see, at a spot southward of Kane's position.

Therefore, I repeat, this route has never been attempted by any expedition under the conditions which we now know constitute the true elements of success: 1st, a good steamvessel, and 2ndly, such resources in sledges and men as shall enable autumn and spring journeys to be accomplished without wanton risk to life, and a certainty of careful exploration.

Recently, it is true, a ship in search of whales did enter this strait,—the *Arctic of Dundee*; and all honour, I say, to him, and those fishermen of America as well, who in their adventurous calling do not hesitate thus to tread on the heels of, and in some cases surpass, the Arctic explorer. Captain Wells' affidavit is as follows—the italics in brackets being my insertion, to explain the statement to those not conversant with the localities.

STATEMENT of Captain RICHARD WELLS, of S.S. *Arctic*, Dundee, Season 1867.

"On June 19th, passed Conical Island (*Crimson Cliffs of Beverley*). There being much ice in the country, we had to pass between it and the mainland. Made fast for a short time to the land-ice off Petrowack Glacier, and rode out a gale of wind from s.s.w. (*by compass*).

"Then steamed close along the land, there being no land-floe. Passed Cape Athol with two ships' lengths. Two natives came on board. Got into open water. Passed between Rocks Dalrymple and Arabella.

"Then steamed to the westward, but found the ice a very heavy pack, impenetrable. Carry's Island then in sight.

"Followed the-ice edge along, which led us once more back to the mainland (*Greenland*). Went ashore at Cape Parry, and saw open water to the north, off Hakluyt Island. Made fast to the land-ice in Whale Sound, and had seven natives on board from Netilik (*see 'Kane's Voyage and Report of H.M.S. North Star.'*)

"Next day steamed past Hakluyt Island within quarter of a mile of it. Got into open water, and steered west true. No ice to be seen from the masthead to the north.

"Made the land-floe on the west side of Smith's Sound, off Talbot and Cadogan Inlet—very heavy ice. The pack to the southward jammed lightly in upon it (*the land ice*), and impenetrable.

"Made fast to this west land-floe, and saw numbers of white whales, bears, seals, unicorns, and walrus.

"Thence sailed north in search of fish. The land in sight, high and bold on both sides, continued northward until we opened out Smith's Sound; Humbolt Glacier being in sight, through the glass, from the masthead.

"When we tacked and came to the southward, there was no indication of ice to the northward; the sky blue and watery, and only a few small streams of light ice to be seen.

"We were then to *the best of my belief*—no observation having been taken—about 79° N. latitude.

"Stood to the southward to attempt a passage to Pond's Bay, and were for several days dodging about in this north water. A heavy breeze occurred from the north, which raised a considerable sea, so heavy that we were compelled to hoist our boats close up. I believe that had we not been upon a whaling voyage, and I should have continued my course to the northward had I seen a fish, we should have met with no difficulty in attaining to almost any extreme northern latitude.

"This report has been dictated by me, and to it I append my signature this 25th day of November, 1867.

(Signed) "RICHARD WELLS, Master.

"On board S.S. *Arctic*, Dundee."

I am indebted to our worthy associate Allen Young for this record.

Thus you find a whaler steamer in "open water" very early in the season in Smith's Sound. Inglefield found it open—Kane was stopped by no impenetrable barrier in his first entry. He only, in my opinion, needed steam-power, for the ice was all in motion—now going south, now north.

Let me now call your attention to this diagram of Smith's Channel and Kane's discoveries. Mr. Petermann has shown it in three dif-

ferent maps. I give it you in one, with the kind assistance of Captain George, of this Society. The black line is Dr. Kane's, in 1855; and the red line is Dr. Hayes' alterations of Kane's work.

The discrepancy between Inglefield and Kane is easily explainable. The former was steering about for a day, just inside the entrance of the Strait; he never landed, could not and did not profess to make a survey, and only made a very usual mistake for Arctic novices—he over-estimated the distance he could see. Dr. Kane's winter quarters are, I believe, excellently fixed by his astronomer-in-chief, poor Mr. Sontag; and Kane, at page 384, vol. ii., gives, in his table of positions, no less than five other places as fixed by positive observations by double altitude and artificial horizon. I am, therefore, utterly at a loss to understand on what grounds Dr. Hayes alters and stretches out his coast-line of the western coast, without giving us any data to justify his proceedings.

Capes Hawks, Prescott, and Frazer are all fixed astronomically, Dr. Kane tells us, and Cape Andrew Jackson likewise. I therefore say, until Dr. Hayes produces his observations, we should adhere to Kane's chart.

I never had a more difficult task in my life than to try to understand from Dr. Hayes' journal what he did on his journey from his ship to the Polar Sea and back again. I was in hopes of being able to say I am satisfied that he has traced the land even farther north than Kane thinks it exists. All I can be sure of is that he says he reached a point which agrees with Kane's Cape Cracroft, and that he saw a headland farther north, some 60 miles off, or in latitude  $82^{\circ} 30' N.$ , whilst he was in  $81^{\circ} 35' N.$

It is a great pity that Dr. Hayes, in his anxiety to make a pleasant book for reading, should have destroyed the simple character of his daily journal, so as to prevent anyone tracing his daily work. He alludes to certain observations as having been sent to the Smithsonian Institution of Washington. I believe this Society has applied for copies of them. I hope they will be accorded, as they will solve many interesting geographical questions.

But, correct surveying apart, Dr. Hayes gives us other information, which he did understand, of an interesting nature; and I should not have alluded to the accuracy of his map had it not been a matter of importance in the subject before us to know on what facts it was asserted that a future explorer would have the ground cleared before him to such and such a latitude.

The temperatures recorded in Dr. Hayes' winter quarters confirm the fact often observed by other Arctic voyagers in high latitudes, that during the winter, in heavy northerly or north-easterly

gales, the temperature rose with the violence of the storm, and fell immediately the gale subsided. This, in Smith's Sound, as at Northumberland Sound and Griffith's Island, merely, I suspect, tells a tale of a disruption of the surface of the ice-covered seas beyond the Arctic traveller, and warm vapour rising from those storm-beaten spaces.

He did reach Cape Hawkes in the spring, and at Cape Frazer, opposite the centre of Humbolt Glacier, found Esquimaux ruins, and again at other points found more traces. On his return, the natives insisted that had he gone further he would have found the west-land Esquimaux. Lastly, Hayes, like Kane's people, was stopped by open water in the throat of the Strait.

His Esquimaux friends on the east side said he would find on the west land traces of more of these people, and that if he went far north he would come to living natives and good hunting-grounds, with "plenty of musk oxen."

Thus again, I say, here you have a continuous land as far as man has gone or seen, that land of the same geological type of the Melville Island, which we have elsewhere found to be so abounding in deer and musk oxen; we have every reason to think the natives will be found there. All travellers have been stopped by water—mark that!—and that sea yielding what will support human life or contribute to the health and strength of our seamen.

That north-water I will not dignify by the term open Polar Sea; experience of former "open waters" warns me against doing so, though I pray that Kane's memory may hereafter be immortalised by the confirmation of his hopes and opinions. All I ask is now, explore it! A little whaler saw the road clear to it last August, as I have told. Inglefield saw no impenetrable barrier in his way for a steamer; at any rate, blocked or open, the north water is to be reached, if not in ship, with boat and sledge. M'Clintock computes that 40,000 miles of sea and land were explored in search of Franklin by boat and sledge, without the loss of one sledge or boat party. I only ask that as much be done in the cause of science and for the sake of our navy as was done from motives of humanity, to try and save the only explorers who have perished during a century in those regions.

Much has been made of the peril incurred, much of the loss of Franklin and his 100 followers, alas! I fear for a purpose. I remember the sheaves of gallant men I have seen laid in their narrow graves in feverish China; I know of the thousands thrown to the sharks of the Gulf of Guinea, in order that political capital might be made of such services at home. I saw more stout men struck

down by yellow fever during a few weeks we were connected with that Stock-jobbing concern called the Anglo-French Mexican Expedition than ever perished during twenty years of Arctic service. And are you going to tell me that after that, when the State needs it, you would hesitate to-day more than yesterday to risk us? Then as to expense, all I say is, it has been grossly exaggerated. I may tell this Society—in strict confidence, or you will get me into a terrible scrape—that a screw two-decker was built all the quicker and all the cheaper at Woolwich Dockyard because such a windfall as the Arctic Expedition of 1850-52 happened to fall in. It is a great mystery. I dare not explain it to you. Dismiss, therefore, any fears about expense and risk. Let us combine and be earnest. Official opposition, if it exist, like the maids of Ismail, waits only for proper pressure: it will be coy, perhaps frown, but will yield nevertheless. The sums voted for the navy, from the last Government Arctic expedition in 1855, for the following ten years—say from 1854 to 1864—was *only* 115 millions sterling. And how much do you suppose out of those 115 millions were spent in the cause of science? Just 686,000*l.*, or less than the one hundred and sixty-fourth part of our naval vote. This includes, remember, the maintenance of the Royal Observatory at Greenwich, and the prosecution of surveys throughout the world. 686,000*l.* out of 150,000,000*l.*! Is it not but as Falstaff's "one halfpennyworth of bread to this intolerable quantity of sack"? and am I to be written down as wicked as Oliver Twist for asking for more?

I will not detain you longer. In my previous paper, which I have reprinted for distribution, you will find the way described in which to carry out this great work of Polar exploration. I have little to add—nothing to take from it; and I only ask this Society to give its President and Council a unanimous vote in favour of the resumption of Arctic expeditions, under Government auspices and encouragement. Sir Roderick Murchison will, as he has ever done, stand steadfast to his colours as the great promoter of geographical adventure, and friend of every earnest and faithful traveller; and with your unanimous vote and active support we, who are of the Committee of the British Association appointed for the furtherance of Polar research, shall be able, I doubt not, to convince the public, as well as our Admiralty, of the wisdom of our completing geographical exploration, and our old flag again wave ere long in frozen seas.

The PRESIDENT said Captain Sherard Osborn had given a very lucid, broad, and fair view of the probabilities and desirabilities of Arctic exploration. He had advocated the subject with the true-hearted feelings of a sailor; not, as it



was stated in some of the newspapers, with a view to his own employment, but with a view to the glory of the British navy and to the education of our naval men, for the approaching expedition to Antarctic regions, to observe the transit of Venus over the sun. Nineteen-twentieths of the discoveries made in the Arctic regions were due to British exploration, and it would be a blot on their escutcheon if they did not maintain the lead in extending our knowledge of the Arctic regions. The proposal to send an expedition by the route between Spitzbergen and Nova Zembla, as advocated by M. Petermann, did great honour to the German nation. Let the Germans do all they could; and it was desirable that the French, who proposed to reach the Pole by Behring's Straits, should succeed in their efforts to organise an expedition; but let not the British navy be behind in these great enterprises. He had received a letter upon this subject from M. Petermann, which he would read, as he thought it was due to that gentleman that he should have the credit of having pointed out, long ago, the existence of a large extent of land near the North Pole:—

MY DEAR SIR RODERICK,

"Gotha, 7th February, 1868.

"Our expedition is to be ready to sail at latest by the beginning of May, 1869. Meanwhile a depôt of coals is to be formed in Spitzbergen, by directly sending there a shipload of coals as soon as possible in the course of *this* year. A small reconnoitring expedition like that of Lamont, Lord Dufferin, Newton, Birkbeck, and others, is also, if possible, in the course of *this summer*, to proceed to lat. 75° on the *eastern coast of Greenland*, the farthest point attained there, and thence to push on northwards along the coast in the footsteps of General Sabine's and Captain Clavering's expedition. I consider this part of the Arctic work as one of the main points remaining to be settled there. The weather and temperatures that expedition experienced from the 1st of August to the middle of September, 1823, must strike every one as remarkably favourable and inviting to explorers, compared with other Arctic regions in the same or even lower latitudes.

"The reconnoitring party to Eastern Greenland will very likely be headed by Lieut. Karl Weyprecht, of the Imperial Austrian navy, an experienced and most excellent officer in every respect, who for several years has devoted his attention to the Arctic question, and who yesterday came to see me, about the undertaking, all the way from Pola in the Adriatic. I wrote further in detail about Eastern Greenland to General Sabine on the 18th December.

"Regarding the recent discoveries of Captain Long and other American whaling captains, I beg to draw your attention to the fact that the high and extended land in 73° 30' N. lat. and 180° long., as discovered by Long, *exactly coincides* (auf ein Haar) with the land I have for many years laid down and stuck to in all my maps. I enclose a copy of my last map, where you can see for yourself, I have stuck to the land in spite of all that was brought against it. You are aware that it was reported on for upwards of 200 years: first by Michajlo Stadurtius in 1645, who then founded the Russian settlement of Nishne-Kolymsk, then by Andrejen and a host of others. But Baron Wrangel did everything to throw discredit upon it, simply because he did not attain it himself. Kellett in 1849 discovered Herald Island and saw the land, but Captain Rodgers in the U.S. ship *Vincennes*, from his exploration in 1855, maintained that the land thus seen and Plover Island laid down by Kellett had no existence.

"I always, however, stuck to it, and perhaps you will kindly do me the favour and give me the credit of the corroboration of the correctness of my Arctic views regarding the Arctic Central Land thus far, in your opening remarks on

Monday, for which purpose I beg to offer you the free use of the whole of the foregoing remarks.

"I have the honour to remain, my dear Sir Roderick,

"Your most faithful and obliged servant,

"A. PETERMANN."

He had also received a letter from his Excellency Admiral Lütke, a circumnavigator of the globe himself, and President of the Imperial Academy of Sciences at St. Petersburg, who was exceedingly interested in this question :—

"The land which the whalers have seen and coasted recently to the north of Behring's Strait, must be that which, according to Wrangel, is perceived sometimes from Cape Yakan. It certainly does not belong to the continent of Asia, because Dechneff and others were able to pass from the mouths of the Kolyma to Behring's Straits in navigating along the Siberian coast. This land to which one of the whaling captains (I think Long) has applied the name of Wrangel, is therefore an island or group of islands like New Siberia (Nouvelle Sibérie). There is no reason why these lands may not extend to Greenland, which perhaps they may touch. It is much to be desired that some of the whale-ships which have steam-power might continue an investigation which, commenced accidentally, might tend in a great measure to settle the question ; but until we see a little more clearly, I do not think it would be prudent to send a great expedition *ad hoc* with the object of penetrating in that direction into the Polar Basin or into the 'Polynia' of the Russians, as it has been the custom to name it.

"This idea, which has been much agitated in France, but of which we have heard less of late, appears to me to be the least practical of all the schemes. You know already how we Russians view this subject. We think that the route between Spitzbergen and Nova Zembla would offer the best chance of success. We stick to it as much as Sherard Osborn does to his route by Smith's Sound. But no matter which line be taken, *provided something be done*. Science will be sure to gain by it, and I see with sincere pleasure that you are beginning to rekindle the question.

"*Apropos* to the term 'Polynia,' there has been a singular misconception in the adoption of it to indicate an open sea round the Pole. Polynia (in Russian) means a hole in the ice more or less large, and rather small than large. It is often employed by Wrangel, because he frequently met with holes in the ice which naturally became more and more numerous as he approached the band of stagnant ice which flanked the coast, and consequently the open sea. But he never intended by Polynia to speak of the sea itself. It has thus happened, that to name one thing, a term has been taken from a foreign language which means quite another thing. Has geographical literature a logic of its own? But custom, like fashion, is a despot with whom we cannot reason ; and, after all, what's in a name?"

Admiral OMMANNEY said he concurred generally in the views put forward by Captain Sherard Osborn ; but he could not agree with him that all hopes of getting to the Pole by the Spitzbergen route were in vain. He was still in favour of a Spitzbergen expedition, and he was glad to hear that M. Petermann still advocated it. It was a route attended with the least danger of all. As a base of operations they had a harbour in the extreme north, where they might form a safe dépôt, and remain on the watch for an opportunity to enter the ice without much risk ; and they would always have open-sea communication with the Thames without much difficulty. The failure of Parry's attempt ought not to deter them ; Parry had no orders to winter there, and when he left

he much regretted having to come away at that season, because he believed he might have penetrated almost to the pole itself from the small amount of ice that was seen in that direction. It must be borne in mind that Parry quitted the Polar Sea at the most opportune time for advancing with steam-vessels of the present day. The proper way to explore by the Spitzbergen route was to winter there, and choose our opportunity. At the same time, he should be glad to see Captain Osborn's plan put in operation. But he would prefer making Spitzbergen the base of operations, as being more accessible from this country. The advantages of carrying the resources of a ship with you in searching the Polar region, with a view to obtain scientific observations, would infinitely surpass those you could command by sledge journeys. From what he had heard from officers who served with Parry on his Spitzbergen voyage, he believed that from our more recent Arctic experience, and the appliance of steam-power to the improved form of vessels, we could penetrate the icy seas towards the Pole. Therefore he was decidedly in favour of making the attempt with ships from Spitzbergen.

Admiral Sir GEORGE BACK said he gave his opinions upon this subject very fully three years ago, and in what he had to say now he could do little more than repeat himself. He was almost convinced, from having himself been at Spitzbergen, that it would be very difficult, if not impossible, to find a passage between Spitzbergen and Greenland. The ship commanded by Franklin, then Lieutenant, in which he was himself a midshipman, reached as far as  $80^{\circ} 36' N.$ , and was much damaged, her consort being almost broken to pieces; every opening along the edge of the ice was sedulously searched, but they found it impossible to make any progress northward; nor could they approach by any possible means the land of Greenland. On the other hand, he thought the passage between Spitzbergen and Nova Zembla theoretically had many advantages, and ought to be tried. On the whole, he leaned to the route proposed by Captain Sherard Osborn. The passage by Smith's Sound was practicable: an expedition could hold by the land, and when the open water was found they could have recourse to boats and sledges, and could always return. He much feared, however, that the proposal would not be adopted by the Government, with a "southerly wind" in the exchequer; nevertheless, he hoped that polar exploration at some future day might be in the ascendant, and that England would acquit herself as she ought, by accomplishing the very little that remained to be done in the Arctic circle.

Captain RICHARDS (Hydrographer to the Admiralty) quite agreed with Captain Sherard Osborn, that the best way to reach the North Pole was by taking ships as far up Smith's Sound as possible, and performing the remainder of the journey by sledges and boats. It was the only safe and certain route—safe, because in the event of disaster, there would be no difficulty in the crews reaching the Danish settlements in Greenland; certain, in as far as anything could be regarded certain, because greater distances had already been accomplished with similar means. But if it was desired to *explore the Polar basin*, then he should prefer the route by Spitzbergen, which would be more exclusively a ship expedition. One fact of great importance in connection with the proposed exploration, was that in 1882 would occur the transit of Venus over the sun's disc. This phenomenon involved the great question of the measurement between the sun and the earth, which was not at present accurately determined within a million or so of miles. The subject was of the greatest interest to astronomers; the Astronomer Royal, ten years ago, spoke of it as "the noblest problem to be solved in astronomical science." To measure the dimensions of the earth, or its distance from the moon, was an easy task; but to measure the distance of the earth from the sun required all the care and accuracy, all the skill, ingenuity, and knowledge which science could supply, and which man could bring to bear upon it; at the same time it was

an opportunity which occurred very rarely. After 1882 the chance of solving this noble problem would not occur again for 130 years. He could not believe this country would allow such an opportunity to pass, or permit any other country to carry out this great undertaking, without taking a leading part in it. The necessity for making the needful preparations was the strongest argument which could be used in favour of an Arctic expedition at the present time, that is to say, it would enable our officers and men to gain experience in ice-navigation. There were very few Arctic men of the present generation who would be qualified in seven or eight years' time to encounter an Antarctic voyage; but there were two or three still remaining, who were well fitted to educate another generation of naval officers for this service; and in these days, when so much was heard about education, he hoped this branch of it would not be forgotten. The trip to the North Pole by Smith's Sound would be an easy matter; afterwards, he should like to see the Spitzbergen route attempted, with a couple of steamers, fitted out in England, and commanded by such men as went out in the last expedition; and then they would come back ready for this Antarctic cruise. He was not quite so unselfish as Captain Osborn, in consenting that the Germans and the French should commence the work; he thought our twenty years of labour entitled us to take the lead, and he believed we should.

Staff-Commander DAVIS, who accompanied Sir James Ross in the Antarctic expedition, said he did not exactly coincide with Captain Sherard Osborn in wishing to throw over the route between Nova Zembla and Spitzbergen. Captain Osborn's objection to that route rested upon the great masses of ice seen by the Swedish *savans* from Spitzbergen. There was no doubt that the ice in travelling south must impinge upon Spitzbergen, and must be seen in that direction. But when we looked at the vast space of open sea between Spitzbergen and Nova Zembla, where of course there would be masses of ice coming south, he quite agreed with M. Petermann that if two good steamers were boldly to attack the pack in that direction, they would eventually get through a heavy stream of ice coming from the North Pole, and when once through, enter comparatively clear sea until they came to the fixed ice around the Pole, beyond which they could not advance. Taking Captain Osborn's scheme by Smith's Sound as a school for Arctic navigators, he approved of it above everything; it would be a first-rate school. At the same time, he thought Captain Osborn had miscalculated the time and the distance it would take to get from Cape Parry to the North Pole by sledge or boat. In Arctic travel they could not go straight ahead as the crow flies; they must follow the windings of the shore, which must greatly increase the distance, and lessen the chance of getting to the Pole. For the purpose of serving as a school he should like to see the plan attempted, in order to train men for the Antarctic zone; for, speaking from experience, he knew they would have no trifling difficulties to encounter.

Dr. MANN, as an astronomer, spoke in support of the remarks that had fallen from Captain Richards with reference to an expedition to the Antarctic regions to observe the transit of Venus in 1882. It was an opportunity which immediately connected the action of the astronomer with that of the geographer. In dealing with the distance of the sun, the investigator was just crossing the threshold where the easily-handled dimensions of the earth pass into star-distances and star-immensity; where, in short, geography becomes astronomy. The nearer moon was now almost a province of the earth. Such geographers present as were not astronomers might not, perhaps, be aware that the exactness of our knowledge of the distance of the sun—the first step virtually in our astronomical knowledge of the infinite—was in the main dependent on the range we could command in making the investigation. In expanding our possible terrestrial base of observation by a few miles, in so crucial a matter as this of the rarely occurring transit of Venus, we are really securing the chance

of much more precise and reliable value for our prime unit of celestial measures. Hence the importance of geographers co-operating with astronomers in this interesting work. The transit of Venus affords a very remarkable instance of the interdependence of the different sciences. It was important to astronomy that observers should have a larger base for the observation of the transit of Venus: Captain Cook is sent to the Pacific, and geography is benefited by the discovery of the South Sea Islands. Geographers extend the stations of observation by terrestrial discovery, and a more exact knowledge of celestial distances is conferred upon astronomers from the enlargement of their base of action.

Mr. J. CRAWFORD, speaking as a landsman who possessed hardly any knowledge of the subject, said he preferred Osborn to Petermann. Petermann was a landsman like himself: Osborn was a first-rate sailor, and had a vast deal of experience. Allusion had been made to the probability of the proposed exploration receiving no support from the Government. But the transit of Venus was an occurrence which they could not pass over. It was the transit of Venus which led to the great discoveries of Captain James Cook, now about 100 years ago; and he believed similar results would follow on this next occasion.

Captain SHERARD OSBORN, in reply, said he had no opposition to meet except the argument which Commander Davis had put forward, the truth of which he acknowledged to some extent, but he could undertake to remove Captain Davis's doubts over the figures if time admitted. With respect to Captain Richards' remarks, the necessity of training men for the Antarctic cruise some years hence had not escaped his attention. His experience of Arctic exploration had taught him that there was always as good fish in the sea as ever came out of it. He had sufficient faith in his profession to believe that if we were to shut up the Arctic book, within a century it would be opened again: that fresh men would start to the fore, and Arctic exploration would be persevered in by this country till there was nothing further to be known of those regions. At this moment he did not think there was a single Arctic officer fit to go in command of such a party, and do the work he had pointed out up Smith's Sound. The few Arctic officers that remained were not equal to the exposure entailed by sledge travelling. They could command ships a few years longer on Spitzbergen expeditions; but we must have faith in younger men, and trust to them to carry on the work he wished to see undertaken by way of Smith's Sound.

Captain ALLEN YOUNG, who was associated with Sir Leopold McClintock in the search for Franklin, said the question had often been asked, What is the use of Arctic exploration? They had only to point to the west coast of Greenland for an answer, where there were flourishing Danish colonies, which produced 200,000 dollars annually, employed 15 ships, and had churches as far north as  $72^{\circ}$  N. This was one of the fruits of Arctic exploration. Another was the large fleet of whalers which annually left Dundee and Peterhead, and sailed round Baffin's Bay and the east coast of Greenland. He held in his hand a letter from Captain David Gray (which he read), to show what private enterprise would do. This gentleman had purchased and fitted a new steamer, at an expense of 25,000*l.*, and was going out this month on a scientific, combined with a whaling expedition. He would sail from Peterhead on the 25th of February, and, among other objects, proposed to ascend the east coast of Greenland as far as  $80^{\circ}$ , and might be the means of ascertaining if the Pole could not be reached in that direction. Captain Young said he agreed with Captain Osborn with regard to making the exploration by land, as far as it was practicable. In conclusion he remarked that the journals of Franklin must be in existence somewhere. No doubt when the ships were abandoned the journals were deposited in a place of safety near the Great Fish River. It only remained to search for them when the snow was off the ground.

The PRESIDENT, in closing the discussion, said the last meeting was honoured with the presence of the Lords of the Admiralty. He only wished that their lordships had been present on this occasion also, to have heard from Captain Sherard Osborn, Captain Richards, and other officers of the navy, the cogent reasons they had given for the employment of British sailors in this most important research. He hoped, upon consideration and reflection, that the day would arrive when a small portion of the British navy would be so employed.

*Seventh Meeting, February 24th, 1868.*

SIR RODERICK I. MURCHISON, BART., K.C.B., PRESIDENT, in the Chair.

ELECTIONS.—*Capt. Edward Baynton; Nathaniel Cork, Esq.; William R. Dalziel, Esq.; Alfred Gillett, Esq.; David Haysman, Esq.; Henry Kingsley, Esq.; Richard L. Middleton Kitto, Esq.; John William Miers, Esq.; M. Lucas Mavrogordato; James E. Coulthurst Pryce, Esq.; the Hon. Edward Stirling; John William Shaw Willie, Esq.*

ACCESSIONS TO THE LIBRARY SINCE THE LAST MEETING, FEBRUARY 10TH.—Churi: ‘Sea, Nile, and Nigritia,’ 1853. Cortambert and Léon de Rosny: ‘Tableau de Cochín-China,’ Paris, 1862. Barr: ‘Cabul and the Punjab,’ 1844. Vigne: ‘Visit to Ghuz,’ 1840. Martin: ‘Hudson’s Bay Territories, 1849.’ ‘Uhde Lander und unteren Rio Bravo del Norte,’ Heidelberg, 1861. Le Page: ‘Travels round the World.’ Captain Wilson: ‘First Missionary Voyage to South Sea Islands, 1797.’ Presented by E. G. Ravenstein, Esq. ‘Asia: João de Barros e Diogo de Couto,’ &c., Lisboa, 1778. Donor, Captain Constable. ‘Authorship of the Practical Electric Telegraph of Great Britain,’ &c. Edited by the Rev. Thomas Fothergill Cooke, Donor. ‘Lake Victoria: a Narrative of Explorations in Search of the Source of the Nile;’ compiled from the Memoirs of Speke and Grant, by G. C. Swayne. Donors, the Publishers. ‘An Enquiry into the Primeval State of Europe.’ Presented by the President. Gottsche, C. M.: ‘De Mexikanske Levemosses,’ and other papers in the Danish ‘Videnskabernes selskabs Skrifter,’ Copenhagen, 1867. ‘Journal of Travel and Natural History,’ edited by Andrew Murray, Esq. Purchased. Le Comte: ‘Nouveaux Mémoires sur l’Etat present de la Chine,’ 3 vols., Paris, 1697.

ACCESSIONS TO THE MAP-ROOM SINCE THE LAST MEETING, FEBRUARY 10TH.—Three sheets of the Governmental Map of Bavaria, viz.:—Sheet No. 13, Lichtenfels; No. 108, Zweybrücken; No. 109,

Pirmasens. Presented by the Bavarian Government. China: Map of the Province of Kwang-tung, by an Italian Missionary; on 2 sheets. Presented by J. L. Southey, Esq., of Hong-kong. Map of the Arctic and Antarctic Regions. Projected and presented by Dr. A. Petermann. Map of Abyssinia, showing the progress of the British Army. Presented by Dr. A. Petermann.

The following Papers were read:—

1. *Geographical Results of the Abyssinian Expedition.* No. 1.
2. *Geographical Results of the Abyssinian Expedition.* No. 2.

By C. R. MARKHAM, Esq., Secretary R.G.S.

IN these papers Mr. Markham communicated to the Society the Geographical results of the Abyssinian Expedition down to January 22nd, 1868. Commencing with a description of the shores of Annesley Bay, he stated that the ancient Greek city of Adulis, the emporium of Greek trade in the time of the Ptolemies, formerly stood close to the shore; but the ruins were now at a distance of four miles. On a few mounds, concealed by salicornia-bushes, there have been found broken pieces of fluted columns, capitals, and other fragments. But a great wealth of antiquarian treasure may be concealed under the mounds; and Dr. Lumsdaine, after making a very slight excavation, found the bronze balance and chain of a pair of scales,—an appropriate first discovery in the ruins of a great commercial city. The Shohos, who inhabit the plain, are a black race, with rather woolly hair and small-boned; but with regular, and, in some instances, even handsome features. They wear a cotton cloth round the middle, and a cloak of the same material, the head and feet bare, and are always armed with a curved sword, worn on the right side, spear, club, and leathern shield. They have cattle of a very diminutive breed, asses, goats, and sheep. Their mode of sepulture is peculiar; the graves are marked by oblong heaps of stones, with an upright slab at each end. A hole is dug about 6 feet deep, at the bottom of which a small cave is excavated for the reception of the body. The tomb is then closed with stones, and the hole leading to it is filled up. The reconnoitering party, under General Merewether, Colonel Phayre, and Colonel Wilkins, made extensive explorations of the approaches to the Abyssinian highlands in the months of October, November and December. At the head of Annesley Bay an extinct volcano was observed, with a double crater 100 feet deep and 300 feet across; and scoria and pumice were seen scattered over the plain. Beyond Arafali extends a plain, where ostriches and antelopes were met with. Travelling